Disease Management System
A Successful Development and Implementation

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Background. In December 1994, MSKCC engaged Cambridge Technology Partners to facilitate a Strategic Application Identification of a system that would best enable MSKCC to meet its vision. MSKCC's vision is to improve the quality of life for people affected by cancer by controlling and curing it through treatment, prevention, research and education. The critical success factors identified for the application were to demonstrate superior medical and economic value; influence the economic decision making process of the payer community; manage change to a patient-focused environment; set, communicate and achieve patient expectations; maintain MSKCC's leadership position in cancer medicine; and maintain access to a representative population of cancer patients. Disease Management was identified as the application that could best meet these critical success factors.

System. The system provides access to MSKCC developed pathways, patient movement along the pathways, patient data including laboratory, pathology and radiology results, and outcomes based on staging and measured by response to therapy, quality of life and resource utilization. The system content was defined by the multidisciplinary Disease Management Teams who developed the pathways and linked materials including prerequisites, patient educational information, clinical trials, narrative guidelines, ICD9 codes and resource utilization spreadsheets with associated charge and cost data. Users may enter comorbidities, complications, toxicities and variances to fully define their patient populations and treatment rationales.

DMS has a three-tiered, client-server architecture. The presentation front-end was developed using Power Builder, and runs on a P-166 CPU with 32 MB RAM and 2 GB hard drive with a Windows95 operating system. The second, functionality layer includes server processes that manage data requests made by the presentation layer. The last, data layer includes the database of DMS specific data, the IBM DB2 Institutional Database (IDB), FileNet for access to a growing number of parts of the medical record, Central Notes and Reports (CNR) for access to radiology and pathology data, Shared Medical System (SMS) for patient demographics, and real time changes and laboratory data copied in real time from the Laboratory Computer System (LCS).

The system was piloted by the Gynecology Disease Management Team from July 15 to September 15, 1996. The remaining 16 teams went live in a staggered rollout that was completed on December 23, 1996. Over 500 DMS workstations have been installed in clinical multi-user sites and on clinician and administrator desktops.

Evaluation. The teams were asked to meet the minimum requirement of placing new patients on the system. Some teams enter all patients. We have tracked compliance of entry of new patients and have an overall compliance of 75%. Compliance reports are provided to team leaders who have continued to provide upward trends in new visit entry of patients. The Outcomes Analysis module of the system will provide the ability to track additional compliance issues including movement of patients along the pathway and entry of additional data, such as comorbidities and variances.

Conclusion. The best treatments of specific cancers are now defined by teams of oncologists. In the past, only patients enrolled in clinical trials were studied closely for response to therapy. Now all cancer patients will be reviewed for response to therapy and the resources utilized to achieve that response. The information will be reported back to the Disease Management Teams who are responsible for refining the treatment pathways and practice patterns as appropriate. This process enhances the effectiveness and efficiency of patient care.

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